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# NEWS

**Proposed North American  
trade alliance: Far-reaching  
effect on petrochemicals  
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- **John B. Slaughter**, nominated to head the National Science Foundation, would be the first black in a top science post. **Page 7**
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# Tire industry changing in face of problems

**Slumping sales, changes in tire technology and car markets are forcing industry to diversify, close plants, and change tire product mix**

William J. Storck  
C&EN, New York

It is hardly any surprise, considering the state of the automobile industry, that the tire industry also is in trouble.

Last year shipments of passenger tires in the U.S. dropped 10.3% from 1978 to 174 million. Tires made for the replacement market fell 9.8% to 122 million, and original equipment

tires (those made for new cars) fell 12.4% to 48 million. In fact, total shipments of passenger tires last year dropped below 1974 levels, when about 175 million passenger tires were shipped. Passenger tires account for about 80% of all tire shipments in the U.S.

The picture thus far for 1980 is even more dismal. Through April total shipments of passenger tires were off 22.8% from the first four months of 1979 to 46.8 million. Replacement tire shipments fell 20.5% to 32.2 million, and original equipment tire shipments plummeted 29.5% to 13.2 million from levels of the first four months of 1979. These figures are based on statistics published by the Rubber Manufacturers Association.

In 1979 combined sales from tires and related products from the five

largest U.S. tire makers—Goodyear, Firestone, Uniroyal, B. F. Goodrich, and General Tire—climbed 5.2% to \$14.7 billion from 1978. However, operating profits from tires and related products from the same five companies fell 42.6% to a cumulative \$542.1 million in 1979 from the year before. Operating profit is computed by subtracting from sales the cost of goods sold, the cost of selling, and administrative expenses.

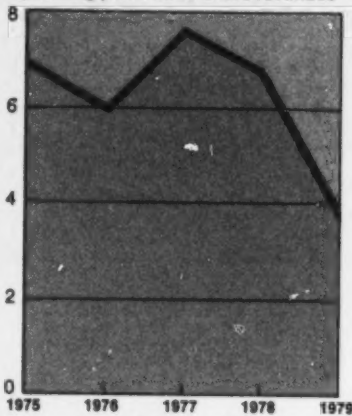
This year, the dramatic downturn in the tire market has forced a number of layoffs and plant closings—mostly at bias-ply tire plants. It has caused a \$13.8 million loss at Firestone in its second fiscal quarter and a \$12 million loss at Uniroyal in its first fiscal quarter. Uniroyal is now projecting a loss for all of 1980. It has forced cuts in benefits at Uniroyal and elimination of cost of living al-

## Non-tire activities are becoming more important for rubber companies

| Company        | Revenue sales as % of total |       | Operating profit as % of total |       | 1979 non-tire activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|-----------------------------|-------|--------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | 1978                        | 1979  | 1978                           | 1979  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Goodyear       | 18.7%                       | 17.3% | 30.0%                          | 25.6% | Industrial rubber—Hose and belting products; tank tracks<br>Chemicals—organic chemicals; polyester resins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Firestone      | 27.5                        | 18.9  | 51.6                           | 34.0  | Diversified products—automotive hose; molded, extruded, and calendered rubber components for transportation; steel rims and wheels; stainless steel beverage containers; beer kegs; seat belts and passive restraints<br>Chemicals—Flexible urethane foam; polyvinyl chloride resin; vinyl films and sheeting; synthetic rubber; nylon and polyester yarns; nylon resins                                                                                                                                                                                                                                                                                                                                      |
| Uniroyal       | 47.2                        | 42.7  | 164.9                          | 24.7  | Chemicals—rubber chemicals; specialty chemicals; pesticides and plant growth regulators; synthetic rubbers; plastics; blowing agents<br>Fabricated rubber & plastic products—plastic-coated fabrics; thermoplastic acrylonitrile-butadiene-styrene sheet; fabricated plastic parts; foam rubber; industrial, automotive, and hydraulic hose; conveyor and power transmission belting; expansion joints; industrial adhesives; industrial fabrics; shipping containers<br>Leisure, sport, and other products—industrial clothing; waterproof footwear; sound and thermal insulation                                                                                                                            |
| B. F. Goodrich | 58.6                        | 48.9  | 73.7                           | 59.6  | Chemicals—polyvinyl chloride resins; caustic soda; chlorine; specialty polymers; plastic additives; vinyl, nitrile, and acrylic latexes<br>Engineered products—caulks, sealants, and adhesives; roofing materials; industrial rubber products; transportation products; conveying systems; fabricated and elastomeric products                                                                                                                                                                                                                                                                                                                                                                                |
| General Tire   | 53.7                        | 53.7  | 69.1                           | 65.1  | Chemicals and plastics—glass-fiber-reinforced plastic; vinyl-coated fabrics; vinyl wall coverings; synthetic rubber; adhesives; latex; polyvinyl chloride resin; vinyl foams and films<br>Industrial products—engineered rubber and plastic parts; extruded sponge; belting and vinyl seals; industrial hose; automotive parts; insulation for rockets and missiles; bridge expansion joints; railway crossing units<br>Aerojet General—Goods and services for energy, environmental protection, agriculture, defense, aerospace, and industrial plant modernization<br>RKO General—radio and television broadcasting; soft drink bottling; motion picture theaters; airline transportation; cable television |

### Operating profit margin from tires collapses...

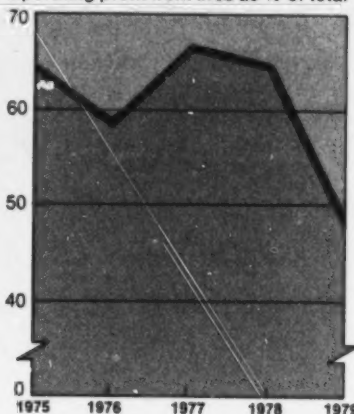
Operating profit as % of tire revenues



Source: Rubber Manufacturers Association

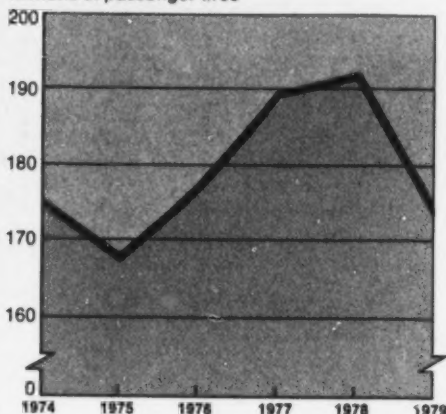
### ...as tire share of total operating income falls...

Operating profit from tires as % of total



### ...and 1979 tire shipments drop to 1974 levels

Millions of passenger tires



lowances at Firestone (C&EN, July 7, page 6). And it has caused industry observers to wonder about the future of the U.S. tire industry in general.

The downturn in tires is having its effect on more basic products within the chemical industry. For instance, production of carbon black, which is used to strengthen rubber, fell 0.6% in 1979 from 1978 levels and production of styrene-butadiene rubber fell 1.2% last year.

Although the slump in the auto industry has had its effect on tires, the problem is really deeper than that. It seems just as much characterized by downsizing of autos, foreign car imports, and technological advances in the tire industry itself.

Smaller cars from Detroit are creating a number of problems for tire producers. One is that tires on the smaller cars last longer than they did on the dreadnoughts of Detroit that were the predominant product just a few years ago. This then cuts into the replacement tire market. Also, the markup on smaller tires is not so great as for bigger tires. Thus, even if the same number of tires are sold, the return on them is smaller.

Technological advances in tires are spelling another problem for tire makers. The switch from the older bias-ply tires to radial tires has extended tire life considerably. In one sense, tire makers have been too smart for their own good. At one time, a car was expected to go through an average of 4.5 sets of tires in its lifetime, but now it is expected to use only 2.5 sets.

Other advances eventually may have an effect. One of these is the self-sealing tire, which seals itself against punctures. If the trend toward this type of tire continues, it eventually may lead to the elimination of the

spare tire. This, in turn, would cut tire sales 20%.

Foreign competition in automobiles also is making itself felt in the tire industry. Each car that is built abroad is equipped with tires that are manufactured abroad, thus cutting into the original equipment market for U.S. tires.

There is one other big problem that tire makers have been coping with for years—the parsimony of the auto companies. Tire makers have long complained that they do not get a decent return on their sales to Detroit. However, they have buckled under to the price pressure put on them by the auto makers because the prevailing wisdom has been that the buyer of a car is likely to replace the tires with the same brand that were supplied with it originally. And manufacturers get a better return on replacement tires.

Although this argument may be true—and it has more than its share of naysayers—tire companies admit that they have been making little, or actually losing, money on their sales to Detroit. Compounding this situation, tire makers say, is that supply contracts between tire companies and auto companies are patently in the car makers' favor. The contract price is negotiated before the model year and that price prevails for the entire model year regardless of cost increases to the tire companies. There is no escalator clause or reopener. Thus, in times of rapidly rising raw material costs, by the end of the model year a tire maker can be losing money on every tire sold as original equipment.

Tire companies have taken several steps to combat these problems. The first step was diversification. This has been very successful in many of the

companies. Divisions other than tires and related products now account for about 57% of sales at Goodrich and 54% of sales at General Tire. Other tire makers have followed suit, but not to so large an extent. However, the moves to diversification were designed more to offset the cyclical nature of the tire markets, and are largely unsuccessful in bucking up profits when the market changes as it has in the past few years. In fact, the diversification efforts have just put a gloss on a bad apple.

More to the point are efforts by the companies to standardize tire sizes and styles, thus reducing the number of different types of tires that they must supply both to the auto makers and to the replacement market. Tire makers see standardization as a move to more simplicity, a method of reducing working capital requirements, and a need for maintaining fewer tires in inventory.

Then, too, tire manufacturers are seeking ways to get higher returns on the smaller tires they are selling. One possibility takes a cue from the auto industry: it is to add options, such as self-sealing capability, to the tires. In this way tire makers hope to be able to charge more, thus increasing their margins.

Producers also are getting out of bias tire manufacture and concentrating on radial production. They also are shifting the base of manufacturing to more profitable plants.

In addition, producers say they are going to have to break, or at least compromise on, the pricing structure in Detroit. They say that they must be able to get a satisfactory return on what they sell as original equipment. However, with the problems at two of the auto companies—Ford and Chrysler—this may not be easy. □

# North American trade alliance gains support

**A broad trade alliance among the U.S., Canada, and Mexico isn't likely yet, but pacts for specific industrial sectors may be possible; one candidate for agreement is petrochemicals and the effects would be profound**

Earl V. Anderson  
C&EN, New York

The U.S. chemical industry is marshaling its trade expertise, as it has done so many times before, to confront yet another major international trade issue. It's not a new issue; Henry Clay snorted about it in his day, and it has resurfaced briefly several times since then. But it is surfacing now in a way that casts a new sense of urgency upon it and makes it impossible to ignore.

The idea, now gaining wide and influential support, is the formation of some sort of North American trade alliance. Conceptually, this alliance, or trade "arrangement," would bind the U.S., Canada, and Mexico into a still-vaguely-defined trilateral trade pact that would benefit all three countries.

Myron T. Foveaux, the Chemical Manufacturers Association's legislative representative for international trade and economics, calls it "a tremendous international issue."

As with most international issues

that are "tremendous," things don't happen fast. But the groundwork is being laid now. Repercussions from this trade arrangement would not be felt for at least five years, and possibly no sooner than 15 years. But repercussions there are bound to be, if an agreement is reached, particularly for the petrochemical industry.

Within the broad concept of a North American trade alliance lie all sorts of options. The most obvious, and the ones that receive the most publicity, are a customs union and a free trade area.

A customs union, or common market such as the European Economic Community, involves free movement of goods, labor, and capital among members. There is a common external tariff against the rest of the world. A customs union implies a certain degree of political cooperation.

In a free trade area such as the now-weakened European Free Trade Association, there is only duty-free trade among members. There is no free movement of capital and labor, nor a common external tariff.

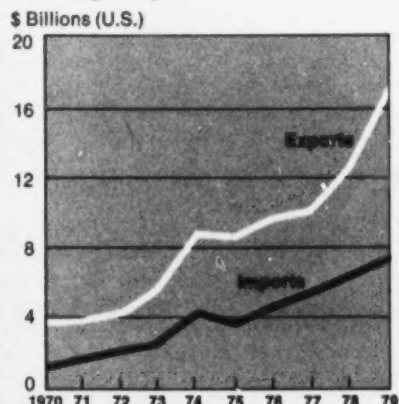
There's almost universal agreement that it would be extremely difficult to consummate an all-encompassing trade pact such as this among the three North American neighbors. It's tough enough to do when countries are economic equals. That's hardly the case with the U.S., Canada, and Mexico.

But there are other possibilities. If a broadly based trilateral arrangement is beyond reach, perhaps a broadly based bilateral pact could be negotiated. It could bind the U.S. with Canada or with Mexico.

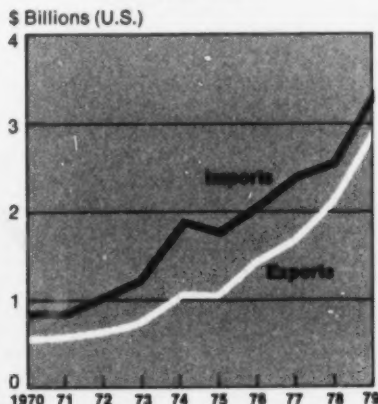
Still another approach getting serious attention now is sectoral agreements. This is where petrochemicals come in. The thinking goes that if a full deck is too difficult to handle, why not work with a few cards at a time? Why not select a few industrial sectors or product groups that can be wrapped into a smaller but easier-to-handle trade package? To many of the experts working on the problem, this is a possible, and more sensible, first step toward a more all-inclusive trade deal.

## How chemical trade stacks up

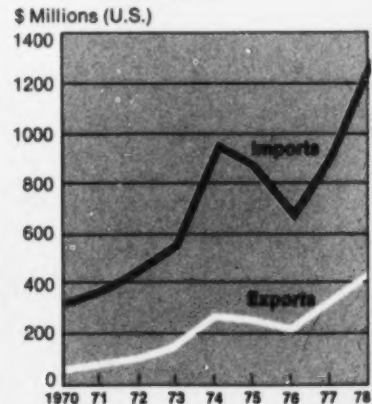
**U.S.: large volume  
large surplus**



**Canada: moderate volume  
moderate deficit**



**Mexico: small volume  
large deficit**



Sources: U.S. Census Bureau, Organization for Economic Cooperation & Development, Statistics Canada, Asociación Nacional de la Industria Química

Besides, there is a precedent for the sectoral approach. The U.S. and Canada signed such an agreement covering automobiles and parts in 1965.

The problem is that not many industries lend themselves to sectoral treatment in a North American trade alliance. One that does, however, is petrochemicals. Agriculture and energy are other possibilities, but among manufacturing industries, petrochemicals stand out as a leading contender.

Some of the reasons are obvious. Petrochemical trade is one area in which all three countries share an intense interest. Last year the U.S. staggered under the weight of a \$25 billion balance of trade deficit, but its chemical industry generated a \$10 billion trade surplus. About two thirds of U.S. chemical exports are petrochemicals.

Both Canada and Mexico want to upgrade more of their extensive hydrocarbon resources into petrochemicals. With its small domestic market of only 23 million people, Canada has to win more export markets to justify the world-scale plants it must have to be a competitive petrochemical producer.

Mexico has big petrochemical ambitions. Its first goal is to build enough capacity to satisfy internal demand and reduce its petrochemical imports. Beyond that, however, Mexico also has its eye on export markets.

For both Canada and Mexico, the U.S. sits in the middle as the most logical export target. It also happens to be the world's largest consumer of petrochemicals.

Actually, both Canada and Mexico already claim the U.S. as their leading chemical trade partner. About 85% of Canada's chemical exports go to the U.S. and a hefty 68% of its chemical imports come from the U.S.

Mexico's chemical trade is almost as dependent upon the U.S. as is Canada's. About 45% of Mexico's chemical exports find a market in the U.S., and the U.S. supplies more than half of Mexico's chemical imports.

U.S. chemical trade, on the other hand, is more diversified and not so dependent on its northern and southern neighbors. Only 5% of U.S. chemical exports go to Mexico and only 3% of its chemical imports come from Mexico. Chemical trade with Canada is more significant. Canada accounts for 14% of U.S. chemical exports and a hefty 28% of U.S. chemical imports.

Little wonder, then, that petrochemicals loom large as a possible sector for trilateral trade negotiations. Yet such a possibility is not widely



**Orefice: time has come**

recognized outside a tight circle of trade experts. The popular conception of a North American trade alliance still is that of a free trade area or customs union.

Whatever the form, support for an alliance is growing, not so much yet in Mexico, but definitely in the U.S. and Canada. Presidential hopeful Ronald Reagan, former hopeful John Connally, and California governor Jerry Brown are among prominent politicians who have endorsed the concept. Dow Chemical president Paul F. Orefice says that he is convinced "the time has come for Canada, Mexico, and the U.S. to form some sort of economic union."

Cynics still have good reason to ridicule the idea. There are a multitude of problems. Some are economic; many are political; and not the least of them are psychological. Nationalism is a strong force in the minds of many Canadians and Mexicans,



**Baucus: spearheaded Senate caucus**

especially concerning dealings with the U.S.

Cynicism alone, however, won't kill the idea of strengthening trade ties in North America. It is attracting more attention and support now than it ever has before.

One reason is the proliferation of regional economic blocs throughout the world. Many are adopting an "if you can't lick 'em, join 'em" attitude. They believe that the best way to survive in this age of regionalism is for the three North American countries to form their own regional bloc.

Then there is energy. Mexico and Canada have huge resources and figure to accumulate more. The U.S. has a mighty thirst for energy products. Some believe that a satisfactory North American alliance can be worked out hinged primarily to energy. Dow's Orefice, for instance, made his proposal for a North American economic union in a speech entitled "Energy—Key to a North American Alliance."

But the very word "energy" is a red flag to many Canadians and Mexicans. They rebel at the thought of sacrificing their precious energy resources on the altar of U.S. materialism with little, as they perceive it, in return.

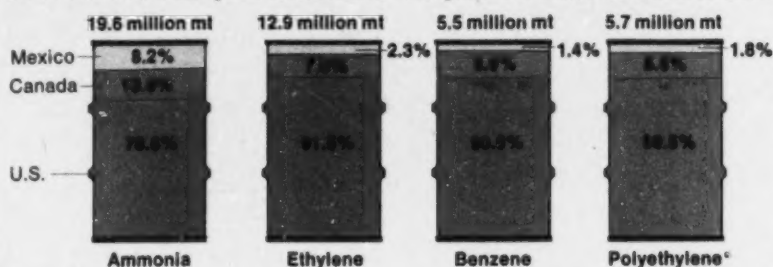
Despite the odds against ever creating a North American trade alliance, the U.S. chemical industry isn't taking the issue lightly. CMA's Foveaux says: "The amount of time we are going to invest in this indicates how important we think it is."

CMA has formed a task group to study the ramifications of a North American trade pact in whatever form it may emerge. Chaired by Max Turnipseed, Ethyl Corp.'s manager of international trade affairs, the group has about a half-dozen members and Turnipseed hopes to recruit more.

Next week, the chief executive officers of several U.S. chemical companies will be among those attending a brainstorming session called by the recently formed Senate Caucus on North American Trade. Sen. Max Baucus (D.-Mont.) spearheaded efforts to create the caucus. Last year, he chaired Senate hearings on North American economic interdependence. Those hearings helped to raise interest in the subject to the level that it is today.

For the chemical industry, that interest will focus initially on a study that the International Trade Commission already has outlined. ITC served notice last month that it was starting an investigation to determine how well the petrochemical industries of the U.S., Canada, and Mexico lend themselves to some kind of freer trade arrangement.

## North American petrochemical output is concentrated in U.S.



\* High and low density. Note: mt—metric tons; percentages may not total 100 because of rounding. Sources: U.S. Census Bureau, Organization for Economic Cooperation & Development, Statistics Canada, Asociación Nacional de la Industria Química.

CMA's task group has only until Oct. 24 to submit written testimony to ITC. There will be no public hearings. Then ITC will have until the end of the year to submit its report to the U.S. Trade Representative.

Although time is short, Turnipseed says that it is too early to speculate about the task group's testimony. He's not certain whether it will recommend a particular course of action or merely respond to the several options that are being considered.

Much will depend upon what the chemical industry's chief executives bring back from their Senate caucus meeting. "That will determine our marching orders," Turnipseed says.

The CMA task group plans to contact petrochemical industry specialists in Mexico and Canada. And it will be busy preparing a full-blown presentation on the subject for CMA's semiannual meeting in Houston this October.

Meanwhile, task group members will be busy interacting with several government agencies. They plan to meet with ITC and directly with the U.S. Trade Representative. Other agencies have been phoning CMA with requests for information.

These phone calls reflect an interest in North American trade that's spread throughout the entire federal government. That's not surprising. In the Trade Agreements Act of 1979, Congress directed the President to make a study of possible new trade ties with Canada and Mexico. He has until July 26, 1981, to report back to Congress.

Inevitably, an interagency task force has been formed, which is chaired by the Trade Representative. Harvey E. Bale, deputy director for policy development for the office of the U.S. Trade Representative, who heads up the office's North American trade effort, says that the Administration is interpreting its Congressional mandate broadly. "It's not just a question of a free trade area or a customs union," he says.

Initial efforts to improve trade relations with Canada and/or Mexico could start with much more modest steps. One possibility is simply to inaugurate better consultation procedures on regional problems.

In a sense, this already is being done. Governors of several New England states have met with their counterparts from Canadian mari-

time provinces. And recently, governors from both sides of the Mexican-U.S. border met for the first time.

Then there's the sectoral approach. Bale warns against placing too much emphasis on petrochemicals. There are other possibilities, he says. The Department of Agriculture is looking into agricultural trade prospects and the Department of Energy is handling energy relationships.

Meanwhile, the interagency task force is conducting a "broad review" of manufacturing industries. Electronics and autos will get a particularly close look.

Despite Bale's caveat, there's little doubt that, among manufacturing industries, petrochemicals rate as a best bet for any future North American trade deal. In fact, petrochemicals probably would have warranted serious consideration even if Congress hadn't directed the President to make a study.

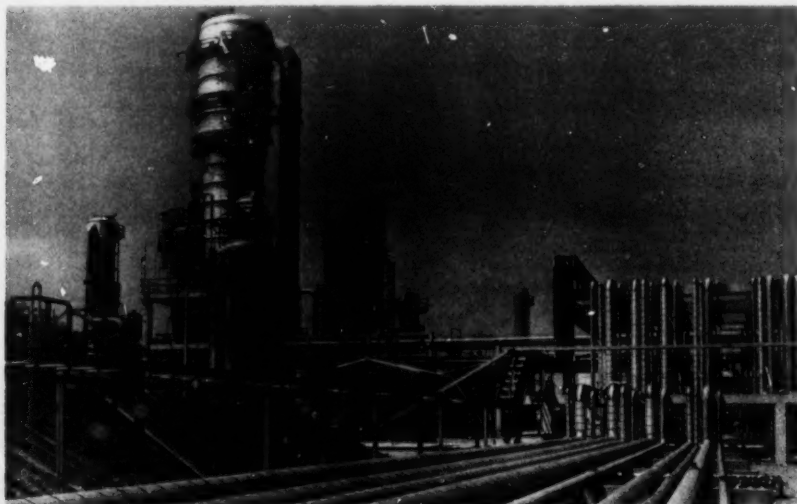
From a Canadian point of view, at least, petrochemicals are an unfinished piece of business, a leftover from the Tokyo round of multilateral trade negotiations. And at last year's hearings conducted by Sen. Baucus on economic interdependence, Dow Chemical of Canada executives came up with a proposal that is too explosive to ignore.

During the multilateral trade negotiations, Canada and the U.S. made a serious attempt to negotiate a bilateral trade agreement. Petrochemicals figured prominently in the discussions. The petrochemical impetus came from Alberta Premier Peter Lougheed. With the petrochemical action moving from traditional chemical centers in Montreal and Sarnia to gas-rich Alberta, Lougheed proposed that Canada seek freer access to U.S. markets for its petrochemicals in return for a promise of increased gas exports to its energy-importing southern neighbor.

Later, this same theme was echoed in a Canadian chemical industry task force report to the Canadian government. The task force made 34 specific recommendations. One of them was that the Canadian government negotiate a bilateral free-trade agreement with the U.S. for a specific list of petrochemicals.

This list included ethylene oxide, ethylene glycol, ethylene dichloride, methanol, high- and low-density polyethylene, polyvinyl chloride, propylene tetramer, styrene, and vinyl chloride. Understandably, these products are the ones that the Canadian chemical industry is emphasizing in its petrochemical buildup.

During the trade negotiations, U.S. and Canadian negotiators were unable to reach agreement on a bilateral

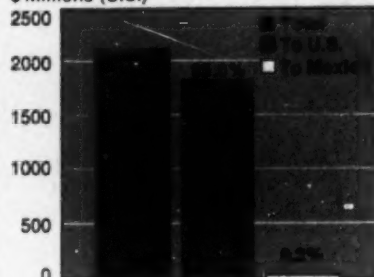


Polysar's 600 million lb-per-year styrene plant at Sarnia, Ont.

## Canadian, Mexican chemical trade depends heavily on U.S.

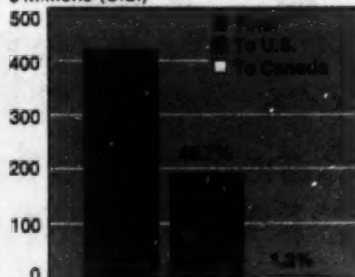
### Exports

\$ Millions (U.S.)



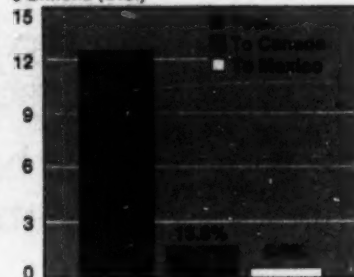
Canada

\$ Millions (U.S.)



Mexico

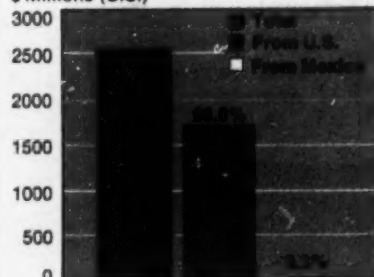
\$ Billions (U.S.)



U.S.

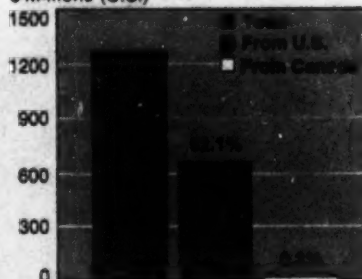
### Imports

\$ Millions (U.S.)



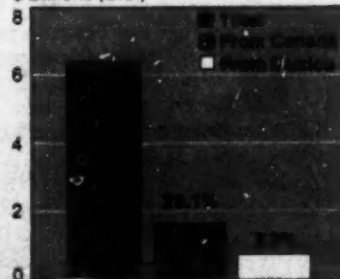
Canada

\$ Millions (U.S.)



Mexico

\$ Billions (U.S.)



U.S.

Note: Data are for 1978. Sources: U.S. Census Bureau, Organization for Economic Cooperation & Development, Statistics Canada, Asociación de la Industria Química

pact. In the Tokyo round, all tariff concessions were made on a multilateral basis.

Of course, Canadian petrochemical producers can take advantage of the multilateral tariff cuts that the U.S. made on chemicals. However, Canadian chemical companies are bitterly disappointed in the U.S. tariff offers on petrochemicals.

In its analysis of trade negotiation results, the Canadian Chemical Producers' Association notes that, for many important inorganic chemicals, tariffs will be eliminated completely in Canada and the U.S. Those tariffs were low to start with, however, and the association expects only moderate expansion of two-way trade in inorganics.

The U.S. made significant tariff cuts on specialty chemicals, whereas Canada's reductions were minor. Canadian producers see little benefit, however, because the Canadian specialty chemical industry sells primarily to its own domestic market in the face of intense import competition. It exports very little and doesn't expect to improve its export performance in the future.

For Canada, the big disappointment was the extent of U.S. petrochemical tariff concessions. It did not receive what it had hoped for or what

it expected. During the final days of the multilateral trade negotiations, the U.S. and the European Economic Community withdrew many of their petrochemical tariff offers because they were under pressure from their domestic industries. And Canadians argue that, as a result of the way in which the U.S. converted its tariff rates to eliminate American Selling Price, Canada will end up facing higher tariffs on many key petrochemicals than it would have without a Tokyo round.

Little wonder, then, that U.S. petrochemical tariffs are still very much on the minds of Canadian chemical executives. Any doubts about that were erased when Robert E. Naegle (then Dow Chemical of Canada president) and company vice president Clifford L. Mort came to Washington, D.C., to testify at last year's Senate hearings. They brought with them a refinement of the proposal originally made by Alberta's Premier Lougheed.

In the no-nonsense manner that is his trademark, Naegle got right to the heart of the energy-trade relationship between the U.S. and Canada. He pointed out that Canada is essentially self-sufficient in energy, figures to add to its extensive reserves of both oil and gas, and will become

an even larger exporter of hydrocarbons in the future.

Then Naegle made his U.S. audience sit up and take notice. He said, "Before you take any consolation in what I've said, please understand that the U.S. is not the only alternative to Alberta or to Canada."

Alberta, for instance, can send its natural gas by pipeline to eastern Canada, where it can displace oil imports. Even selling liquefied petroleum gas and other upgraded hydrocarbons to Japan, he says, may be preferable to straight-out gas sales to the U.S. The same holds true if Canada becomes a net exporter of oil.

The bottom line, Naegle believes, is that the U.S. will not preferentially get increased energy supplies from Canada for money alone. He suggests that the U.S. will have to open up its markets to selected, upgraded Canadian products. This will create much-needed jobs in Canada and improve its balance of payments.

Expanding upon Lougheed's proposal, Naegle thinks that the U.S. should allow duty-free access for a sizable list of Canadian petrochemicals—equal to 10% of the thermal content of the natural gas exported from Canada to the U.S. Mort testified that the effect of such a proposal on the U.S. petrochemical market

would be negligible. Canada's petrochemical industry, though growing rapidly, isn't yet able to supply the full 10% of natural gas hydrocarbons as petrochemicals. Even when it can, Mort says, Canadian petrochemical exports would represent no more than 10% of the U.S. market. That's barely more than one year's growth in the U.S. market, which, he says, "would be a very small sacrifice in terms of U.S. industry growth in order to obtain such secure hydrocarbon supplies."

From a U.S. point of view, these proposals may sound like strong medicine. From the Canadian side of the border, they are perfectly reasonable.

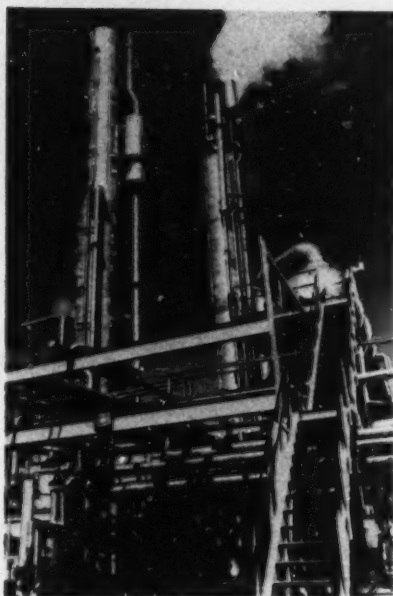
The Canadian petrochemical industry traditionally has been the weak sister of its U.S. counterpart. With small, inefficient plants, it has had trouble competing with imports, particularly from the U.S., in its own domestic market. Exports have been limited.

A small Canadian market, the quantum leap in the size of petrochemical plants required to remain competitive, and Canada's dependence on imported consumer goods combined to make life difficult for Canada's petrochemical producers.

Mort notes that, in the mid-seventies, Canada's per capita consumption of domestically produced ethylene derivatives was only half that of the U.S. There's not enough difference in the two countries' life styles to explain the disparity. Mort attributes it to the large part of Canada's petrochemical market supplied in the form of imported consumer goods such as household appliances, autos, and "plastic-handled screwdrivers." During those years, Mort says, one world-scale plant could have supplied the entire market available to Canadian producers of several key petrochemicals.

Now, fortified by an enviable hydrocarbons potential, Canada's petrochemical industry is starting to flex its muscles. But success will depend upon building economical, world-scale plants. They, in turn, will depend upon securing additional petrochemical markets outside Canada's borders.

In Canada, world-scale petrochemical plants already have arrived. Two major complexes have been put on stream in the past two years. One is the Petrosar project, a billion pound-per-year ethylene plant in Sarnia. Petrosar is a consortium of Union Carbide, Du Pont, Polysar, and Canadian Development Corp. The other is a major new petrochemical facility started up last year by Alberta Gas Ethylene. It is tied



**Pemex's 1000 ton-per-day ammonia plant at Cosoleacaque, Mexico**

into a major fuel project and a pipeline operation.

With the Petrosar unit in place, Du Pont expanded high-density polyethylene capacity. Polysar built a huge new styrene monomer unit. Shell Chemical built polypropylene and isopropyl alcohol plants. Dow added a world-scale low-density polyethylene unit.

At the heart of the Alberta development are five plants that extract 85,000 bbl per day of ethane from Alberta's gas transmission lines. About 40% of this ethane feeds a 1.2 billion lb-per-year ethylene plant at Red Deer, Alta., owned by Alberta Gas Ethylene; the other 60% goes to U.S. markets through the Cochin pipeline.

Dow buys the full output of the Red Deer ethylene plant and consumes at least 700 million lb of it at its Fort Saskatchewan complex, where it produces ethylene dichloride, vinyl chloride, and ethylene glycol.

The Petrosar and Alberta plants have boosted Canadian ethylene capacity from 1.4 billion lb in 1977 to 3.4 billion lb per year. With the new satellite plants that have been built around these core complexes, capacity for ethylene derivatives has mushroomed. Polyethylene capacity has doubled. Ethylene glycol capacity has increased two and a half times. Vinyl chloride capacity has risen almost five fold. Styrene and polyvinyl chloride capacities have doubled.

Mort anticipates even more petrochemical expansions in Canada, based primarily on Alberta's natural gas. He says that enough ethane can be extracted from Alberta gas streams

to produce an additional three to four billion lb of ethylene annually.

He expects ethylene production in Alberta to triple to 3.6 billion lb per year by 1986 or 1987. Much of it will be upgraded to ethylene derivatives. Mort also expects methanol production to quadruple from 140 million gal per year to about 600 million gal.

James M. Hay, who has succeeded Naegele as president of Dow of Canada, stresses, however, that how far and how fast Canada goes in petrochemicals depends largely on additional trade agreements. Canadian producers of aliphatics, in particular, are likely to continue hammering home this theme in Ottawa.

Aside from the obvious aliphatics producers, no broad-based support for freer trade with the U.S. or anyone else has surfaced in the Canadian chemical industry. Like many Canadian manufacturing industries, segments of the chemical industry have been built behind a protective tariff. They are more concerned with import competition than with export opportunities.

But broad-based industry support may yet appear. The Canadian Chemical Producers Association has hired a consultant to conduct a study of the industry's attitude toward freer trade. The results should be available later this year.

CIL senior vice president David I. W. Braide, who also chairs the association's trade policy committee, says that the Canadian chemical industry as a whole "isn't going hell-bent for leather" over the idea yet, although several individual companies may be. CIL itself is re-evaluating its position on the issue.

Naegele thinks that the producer association's survey will show there is wide support in the Canadian chemical industry for his proposal. He also thinks that Mexico could benefit from a similar deal with the U.S.

Like Canada, Mexico has a king's ransom in hydrocarbon resources. And like Canada, Mexico has ambitious plans for petrochemicals.

But there are some important differences between the two countries. For instance, Canada is a developed nation with a relatively small population of 23 million. Mexico is a developing country with a much larger population of 67 million.

Although Mexico has taken some giant strides in developing its petrochemical industry, it has a long way to go. It still isn't able to satisfy its ever-increasing domestic demand or to reduce its substantial petrochemical imports. Only when it licks these two problems will exports become a significant factor for Mexico's petrochemical industry.

That export capability may not be very long in coming. This year, Mexico figures to have 82 basic petrochemical plants operating with a total capacity of 8.9 million metric tons per year. All of these plants are owned by Petroleos Mexicanos (Pemex), the state-owned oil company that has a monopoly on production of almost 50 "basic" petrochemicals.

But Pemex is figuring on a petrochemical growth rate of 23.9% per year over the next five years. It plans to be operating 157 petrochemical plants by 1985. Capacity to produce basic petrochemicals will increase from 8.9 million metric tons to a hefty 26 million metric tons annually.

Most of that increase is earmarked for the Mexican market. Including Pemex's own internal requirements, Mexico's petrochemical demand is expected to increase from this year's 7 million metric tons to 21 million metric tons in 1985.

José Luis García Luna, manager of petrochemical development for Pemex, says that exports of basic petrochemicals actually will decline over the next two years. By 1982, he estimates that exports will have dropped to 510,000 metric tons, less than half of what they will be this year.

After 1982, however, exports will start picking up steam again. By 1985, García thinks that they will reach 2.8 million metric tons.

The logical market for these Mexican petrochemicals is the U.S. Consequently, it would seem that Mexico would be as interested as Canada in striking a bilateral deal with the U.S.—assured energy supplies in return for a bigger slice of the lucrative U.S. petrochemicals market.

So far, there's no indication that Mexico is interested. García says that he never has heard such a proposal discussed. Neither have several others involved in the Mexican chemical industry.

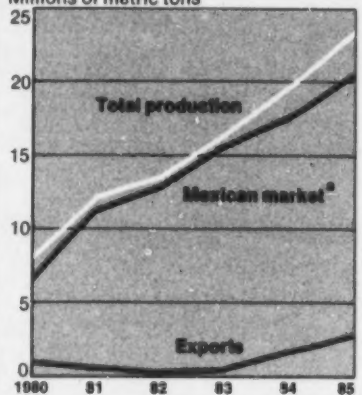
In fact, there's no evidence that, with the exception of a few academic economists, there's much thought being devoted in Mexico to any sort of North American trade alliance.

Mexican president José López Portillo has stated flatly that Mexico isn't interested in a North American trade pact. And Mexico's recent decision not to join the General Agreement on Tariffs & Trade (GATT) indicates that for the time being, at least, Mexico intends to continue developing its industrial base behind a wall of high tariffs and other import barriers.

As to what U.S. petrochemical companies think about all of this, they have been noticeably silent about the issue, and an industrywide

## Mexico has hefty petrochemical ambitions

Millions of metric tons



<sup>a</sup> Includes Pemex's internal consumption.

Source: Pemex (Petroleos Mexicanos)

position may not become apparent until CMA's task group has something to say about the subject.

One chemical industry trade expert says that he wants to know more about the Naegele proposal before he comments on it. Others are not that hesitant, at least off the record.

One company official says that the likes of a Naegele deal would make most of the U.S. petrochemical industry "pretty damned unhappy." Says another, "A considerable segment of the U.S. petrochemical industry will have great difficulty with it."

Behind these less-than-enthusiastic comments lies one disturbing thought. The prospect of obtaining secure energy supplies may benefit the entire U.S., but the petrochemical industry would pay the whole bill by sacrificing part of its own market.

There are other potential problems with a proposal such as Naegele suggests. Although he didn't say so directly, he at least intimated that Canadian producers want a specific share of the U.S. petrochemical market. And any talk about assigning a specific share of the U.S. market to foreign imports spells trouble.

There no doubt are ways that the stigma of market share can be skirted. "It's just that Bob was too crude about the way he phrased it," says one U.S. trade expert who knows Naegele.

Perhaps the biggest stumbling block to any bilateral or trilateral petrochemical deal is GATT. Under GATT rules, broad regional trade blocs are permitted: Narrow, sectoral arrangements are not.

It's true that GATT gave its blessing in the form of a waiver to the U.S.-Canadian automotive agreement. But when that deal was worked

out, Japanese and European cars weren't the factor on the U.S. market that they now are. And the U.S. had much more clout with GATT in those days than it does now.

In the auto pact, fewer companies are involved than there would be in a petrochemicals deal. With petrochemicals, the product mix is more complex. European chemical companies no doubt would try to block a North American petrochemical pact because the U.S. figures heavily in their marketing plans.

Again, there are possible solutions. One would be to negotiate bilaterally or trilaterally, then apply the results of the negotiations on a multilateral basis. A GATT waiver then would not be necessary. But this could open up a whole new can of worms.

The U.S. would expect concessions from those countries that didn't participate in, but received the benefits of, any North American agreement. That puts the U.S. right into the thick of another multilateral trade negotiation.

Thus, it seems that insurmountable problems must be overcome before there can be a North American trade alliance. These problems exist in Mexico, in Canada, and in the U.S.

Mexicans and Canadians alike rebel at the idea of, as they put it, "giving away" their energy resources. Mexico still clings to a protectionist policy, which is politically popular at home.

In Canada, the idea of freer trade is winning more and more converts, but the issue is far from resolved. Meanwhile, serious problems such as the constitutional issue and energy policy pits province against province and province against the central government. These problems will keep freer trade off the front burner for a while.

Many Canadians and Mexicans feel uncomfortable thinking about an economic alliance with a country as large as the U.S. Canadian Prime Minister Pierre Elliott Trudeau said it all when he said that being a neighbor of the U.S. is like being in bed with an elephant. Even a friendly elephant can roll over in the middle of the night.

Sectoral arrangements, such as those being considered for petrochemicals, present fewer and less formidable problems. But they are not inconsequential.

Meanwhile, the U.S. chemical industry isn't taking anything for granted. Max Turnipseed believes that petrochemicals will be an important part of any North American trade negotiations. And, he adds, "We want to have as much input as possible into the thought process." □